REMARKS

In view of the above amendments and following remarks, reconsideration of the rejections contained in the Office Action of November 27, 2006 is respectfully requested.

The Examiner rejected claim 1 as being anticipated by Borel, U.S. Patent 6,340,164. Further claims 2-4 were rejected as being unpatentable over Borel. However, it is respectfully submitted that the present invention clearly distinguishes over Borel.

The present invention is directed to an in-line roller skate for racing. In the current art as illustrated in Fig. 1, for example, the wheels have a standard size diameter of 80 mm or 84 mm, depending on the characteristics of the skate and the particular needs of the user. The sole 3 of footwear 2 is connected to a chassis 4 of the skate by fastener 7 at two binding points 5 and 6. The center-to-center distance between these binding points is 165 mm.

With racing skates it is desired, however, to have wheels on the order of 100 mm size. This boosts the performance capabilities of the skate in a race. In the prior art this has been accomplished by having a number of the wheels of the larger size (reference 8 in Fig. 1), but with a second wheel 9 of smaller size. The smaller size is necessary in order to both keep the height of the chassis in relation to the rolling plane within acceptable limits as well as accommodate the screws or rivets that connect the toe of the footwear to the chassis. However, this arrangement of the prior art is a compromise solution that does not fully meet the high performance requirements in terms of stability, speed and accuracy in leading and running the skate that would be desired in competition for a racing skate. The smaller-diameter second wheel may give rise to problems of instability or vibrations and can be the cause of poor control of the skate when used under the most demanding conditions.

The present invention has solved this problem and enabled a skate which has all of the wheels provided with the oversized diameter of 100 mm. Having all of the wheels with an oversized diameter of 100 mm is enabled by the present invention by moving the front binding point to a location between the first and second wheels of the skate. At the same time, the height of the front zone of the chassis, in relation to a ground contact plane of the wheels, is substantially equal to the diameter of the at least four wheels. That is, the height of the front zone of the chassis does not need

to be raised even though all of the wheels on the chassis are of a larger size. This is because of the location of the binding point between the front wheel and the second wheel. The binding point at the front of the chassis, according to the present invention, in addition to being located between the front wheel and the second wheel, is also located approximately in a toe juncture area of the sole of the footwear. By moving the point of attachment to this extent, a greater torsional rigidity of the skate is obtained due to the greater moment arm that is defined by the first and second binding points. All of these aspects together lead to better performance characteristics of the skate. This is discussed in the specification at page 2, line 30, to page 3, line 12, and from page 5, line 23 to page 6, line 10.

Claim 5 reflects the present invention by reciting that the first binding point is positioned in proximity of the heel-piece zone of the sole and the second binding point is positioned approximately in a toe juncture area of the sole. Claim 5 further reflects the invention in reciting that the fasteners for joining the footwear to the chassis at the first and second binding points have the second binding point located between the front wheel and the second wheel. All of the wheels of the skate are recited as being solely wheels having a diameter of at least 100 mm. Further, the claim recites that a height of the front zone of the chassis, in relation to a ground contact plane of the at least four wheels, is substantially equal to the diameter of the least four wheels.

The cited patent to Borel is directed to a so-called aggressive in-line roller skate. This type of skate has characteristics that are completely opposite to those that are needed for racing skates, to which the present invention is directed. These aggressive skates, used for running and jumping on a ramp, or for grinding along a rail, are not required to be fast. However, they must be highly maneuverable and very close to the ground. To achieve this, they are provided with wheels that have a diameter that is smaller than conventional wheels, not larger as in the present invention. This point is in fact supported by simply looking at Borel, which illustrates relatively small wheels.

It is further noted that Borel is directed toward a system for attaching a soft portion 7 of a fitting portion 2 (the boot) to the hard portion or cradle 8 by mechanisms 17-18 and 22-25. Note the discussion in column 7, lines 37-59. This is <u>not</u> a discussion of how the footwear is attached to the <u>chassis</u>, however.

The chassis is designated by reference number 5 in Borel. Noting lines 36-40, horizontal plate 4 of the chassis 5 is adapted to fix the fitting portion 2 "as known in the heel and forefoot zones." Accordingly, exactly where and how the binding points between the footwear and the chassis occur in Borel is left to the knowledge of those of skill in the art.

However, as described in with respect to Fig. 1 of the present invention, for a racing skate, the known prior art places the second binding point in the forefoot zone in the metatarsal area of the foot.

With the above in mind, it may be seen that Borel fails to disclose the following aspects of claim 5. Borel does not disclose a second binding point for attachment of the sole of the footwear to the chassis that is positioned approximately in the toe juncture area of the sole, as explained above. Thus, Borel does not disclose the second binding point being located between the front wheel and the second wheel. As also explained above, Borel does not disclose that the at least four wheels on the chassis are solely wheels having a diameter of at least 100 mm.

In rejecting the dependent claims, the Examiner took the position that having four wheels with a diameter of 100 mm would have been obvious to one of ordinary skill in the art "since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice." It is initially noted that the size of the wheel is not a reference to a known material. The 100 mm size has been chosen, as has been acknowledged, because it is for racing. However, known constructional arrangements of racing skates have required the second wheel to be of a smaller size to accommodate the binding point to the footwear and to maintain the height of the chassis at the front zone. Applicants have recognized that there are problems with having a second wheel of a smaller size, as discussed above. Applicants have further discovered that the binding point can be moved to the position between the first and second wheels and the second wheel increased in size without increasing the height of the chassis. In addition to increasing the size of the wheel, the increase in the separation distance between the first and second binding points also improves performance.

The size of the wheel is not an obvious design choice. The size of the wheel is chosen with consideration of the use of the skate. In a racing skate, the larger size wheel is desired, as has been

claimed. This is distinct from Borel, which is an aggressive type of skate. Further, note that the claim limitation contains several aspects. Not only is the size of the wheel required to be at least 100 mm. It is further required that all of the wheels be wheels of at least 100 mm. It is the ability to have all of the wheels of this size that provides the significant performance advantage described above. This is not a matter of simple "design", and as such it is improper to reject such as a matter of design choice. The size of the wheels is a substantive reflection of the function of the skate. It is not an aesthetic design change, but is a change relating to the mechanical function; see MPEP §2144.04(I). Nor is it a matter of a "mere" change in size; note MPEP §2144.04(IV)(A) where the Federal Circuit discusses that if the only difference between the prior art and the claims is a recitation of relative dimensions, and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device; in this case, however, it has been established that the claimed device will perform differently because the wheels are of a larger size, and all of the wheels are of this size.

In rejecting claim 2 the Examiner took the position that the center-to-center distance between the first and second binding points between 170 mm and 210 mm is obvious because it is simply the discovery of an optimum or workable range involving only routine skill in the art. However, this is not the case. The separation distance is greater than in the prior art and is a reflection of the repositioning of the second binding point. This aspect has not been known in the prior art cited by the Examiner as a result effective variable which it might be desirable to optimize. Further, the distance is a reflection of the fact that the binding point should be between the first and second wheels; the distance relates to the distance of the wheels that is also recited in the claims at least in part.

For the above reasons it is respectfully submitted that the present invention which has now been set forth in claims 5-7 clearly patentably distinguishes over Borel. Indication of such is respectfully requested.

In view of the above amendments and remarks, it is submitted that the present application is now in condition for allowance, and the Examiner is requested to pass the case to issue. If the Examiner should have any comments or suggestions to help speed the prosecution of this application, the Examiner is requested to contact Applicant's undersigned representative.

Respectfully submitted,

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Version with Markings to Show Changes Made

TITLE OF THE INVENTION

IN-LINE ROLLER-SKATE~~, PARTICULARLY~~ FOR RACING

BACKGROUND OF THE INVENTION ~~DESCRIPTION~~

(1) Field of the Invention

The present invention refers to an in-line roller-skate, in particular a racing skate, provided with wheels featuring an oversized diameter.

(2) State of the Prior Art

Racing-type in-line roller-skates, as they are currently used~~—to competitive purposes~~ in competition, are generally provided with wheels having standard-sized diameters of either 80 mm or 84 mm, depending on the characteristics of the skate and the particular needs of the user, while the connection of the sole of the footwear to the chassis of the skate takes place with a pre-defined center-to-center ~~centre-to-centre~~ distance of 165 mm.

Such a need for unified sizes to be defined arises from the necessity for different wheels and different footwear to be coupled to the chassis~~; this~~. This in fact enables both manufacturers to mass produce the concerned items and the skate to be personalized by the user through the replacement of the wheels or the footwear with similar component parts available on the market in the form of individual items or kits.

These standardized sizes of the wheels and the center-to-center ~~centre-to-centre~~ distance for the connection between footwear and chassis are used also in competition, i.e. racing skates.

As far as racing skates are concerned, however, the need is particularly felt for the possibility to be given of using wheels featuring an oversized, i.e. larger diameter, generally on ~~in~~ the order of 100 mm, in ~~view of~~ order to boosting the performance capabilities of the skate in a race.

A solution that is currently adopted by manufacturers to ~~in view of~~ at least partially solve the above-cited problem, as ~~and~~ illustrated in Figure 1, lies in providing a skate with four or five wheels, three or four wheels of which, respectively, have a larger diameter, whereas the wheel situated immediately behind the front wheel (called also "second wheel") has a smaller diameter. Such a contrivance is necessary in order to be able to keep the height of the chassis in relation to the rolling plane within acceptable limits: in correspondence of the place in which the ~~said~~ second wheel is accommodated, in fact, the chassis must also be capable of accommodating in its interior the screws or the rivets for the connection of the toe of the footwear to the same chassis.

As ~~it~~ can, on the other hand, be readily appreciated, this is much of a compromise solution that fails to fully meet ~~meeting~~ the particular high-performance requirements in terms of stability, speed and accuracy in leading and running the skate, which a competition or racing skate should desirably comply with. As a matter of fact, the smaller-diameter second wheel may give rise to problems of instability or vibrations and, as a result, may be the cause of ~~a~~ poorer control of the skate when the latter is being used under most demanding conditions, such as for example in racing contests, thereby determining, among other things, even a poorer efficiency in terms of power or driving force.

SUMMARY OF THE INVENTION

It therefore is a main object of the present invention to do away with the above-cited drawbacks of prior-art solutions by providing an in-line roller-skate, in particular for racing, which is provided with wheels featuring an oversized diameter and is capable of ensuring high-level performance capabilities as generally required and desired in racing contests.

Within the above general object, an important purpose of the present

invention is to provide a skate with oversize-diameter wheels, which has such features as high stability, high leading and running precision and speed, while keeping the height of the chassis in relation to the rolling plane substantially unaltered.

Another purpose of the present invention is to provide an in-line roller-skate, in which the footwear and chassis assembly has a greater torsional rigidity.

A further, equally important purpose of the present invention is to provide an in-line roller-skate at competitive costs, which is in addition capable of being manufactured with the use of existing techniques and tools.

According to the present invention, these aims, along with further ones that will be apparent in the following description, are reached in an in-line roller-skate, particularly for racing, which incorporates the characteristics as recited in the appended ~~Claim 1~~ Claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Anyway, features and advantages of the skate according to the present invention will be more readily understood from the description of a particular, although not sole, embodiment that is given below by way of non-limiting example with reference to the accompanying drawings, in which:

- Figure 1 is a side elevational view of a racing roller-skate with oversize-diameter in-line wheels according to the prior art; and

- Figure 2 is a side elevational view, similar to the one appearing in Figure 1, of a racing roller-skate with oversize-diameter in-line wheels according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to Figure 1, ~~the~~ reference numeral 1 is used ~~there~~ to generally indicate a racing skate with oversize-diameter in-line wheels according to the prior art~~; this~~. This skate 1 comprises ~~a~~ footwear 2, which is provided with a sole 3 featuring binding points 5 and 6 for attachment to the chassis 4, which are provided in a ~~the~~ heel-piece zone and in a ~~the~~ metatarsal area of the foot, respectively. The connection of the footwear 2 with the chassis 4 is carried out by means of such known fasteners ~~fastening means~~ 7 as screws or rivets.

Rotatably associated to the chassis 4 are three larger-diameter wheels 8, generally with a diameter sized to 100 mm, and a wheel 9, or second wheel, having a standard diameter (i.e. 80 mm or 84 mm) and positioned behind the front wheel. As already stated earlier in this description, in order to be able to keep the height H of the chassis 4 unchanged in relation to the rolling plane 10, the second wheel 9 must have a smaller diameter than the remaining wheels of the skate~~,~~ so as to allow for the accommodation, inside the chassis 4, of the fasteners ~~fastening means~~ 7 needed to secure the footwear 2 to the same chassis 4 in correspondence of the second binding point 6. This prior-art solution entails the drawbacks that have already been elucidated earlier in the introductory part of this description.

On the contrary, Figure 2 illustrates a racing roller-skate with oversize-diameter in-line wheels according to the present invention. In this case, the skate 101 comprises ~~a~~ footwear 102 provided with a sole 103, which features ~~feature~~ at least two binding points 105 and 111 for attachment to the chassis 104; the first of such binding point 105 is positioned in the heel-piece zone of the sole, whereas the second binding point 111 is positioned in proximity of the toe zone of the foot, approximately in the area in which the juncture of the toes lies. The connection of the footwear 102 with the chassis 104 is carried out by means of such known fasteners ~~fastening means~~ 107 as screws or rivets.

The second binding point 111, i.e. the front one, turns therefore out as being situated at a greater distance from the first binding point 105, i.e. the rear one, as compared with the prior-art solution. In an advantageous manner, the center-to-center ~~centre-to-centre~~ distance between the first binding point 105 and the second binding point 111 is comprised between 170 mm and 210 mm, or shows an increase comprised between 3% and 27% over currently used centre-to-centre distance values; a preferred value for such a center-to-center ~~centre-to-centre~~ distance is 195 mm.

Thanks to the above-illustrated arrangement, the chassis 104 is capable of accommodating a train of wheels 108 comprising solely oversize-diameter wheels, while at the same time accommodating the fasteners ~~fastening means~~ 107 for the footwear 102 in its interior, wherein the height H of the front zone of the chassis 104 in relation to the sliding plane 110 is kept unaltered. In the embodiment illustrated in Figure 2 there are provided four wheels 108 having an oversized diameter, advantageously a diameter of 100 mm, in an in-line arrangement. It will be readily appreciated, however, that skates according to the present invention can equally well be provided with in-line arrangements of even five wheels.

Fully apparent from the above description is therefore the ability of the in-line roller-skate according to the present invention to effectively reach the afore cited aims and advantages: in fact, the skate provided with a chassis of an unaltered height H in relation to the sliding plane, and supporting a complete train of unvaryingly oversize-diameter wheels, enables high performance levels to be obtained, while at the same time keeping the height of the center ~~centre~~ of gravity of the skater unaltered.

Therefore, the skate according to the present invention has characteristics of high stability, high leading and running precision, as well as increased speed thanks to the greater propelling power deriving, among other things, from a lower loss of energy due to vibrations and

instability of the skate.

Such an improvement of the performance level of the skate is also due to a greater torsional rigidity of the footwear-chassis assembly, which are in fact assembled together with a greater arm owing to the increased center-to-center ~~centre-to-centre~~ distance between the binding points joining the two parts together. Such a feature also contributes to a faster response of the skate to leading commands during running, and is effective in reducing vibrations coming from the chassis.

It shall be appreciated that the above-described skate may of course be the subject of a number of modifications and variants, also in connection with different applications, without departing from the scope of the present invention. Furthermore, the materials used to manufacture the skate of the present invention, as well as the shapes and the sizing of the individual component parts thereof, may each time be selected so as to more appropriately meet the particular requirements or suit the particular application, again without departing from the scope of the present invention.

IN-LINE ROLLER-SKATE, PARTICULARLY FOR RACING

ABSTRACT

An ~~The present invention refers to an~~ in-line roller-skate~~, in particular a roller-skate~~ for racing~~, comprising a~~ includes footwear (102) and a chassis (104) supporting a train of wheels (108)~~; the~~. The footwear (102) is provided on the bottom with a sole (103), which is in turn provided with at least a first and a second binding point (105, 111) for attachment to the chassis (104). The first binding point (105) is positioned in the heel-piece zone of the sole (103), whereas the second binding point (111) is positioned in proximity of the foot toe, approximately in the area in which the juncture of the toes lies. The train of wheels (108) has ~~comprises~~ solely wheels (108) having a diameter of 100 mm, while the chassis (104) is adapted to accommodate fasteners in its interior ~~fastening means~~ (107) for joining the footwear (102) to the chassis (104).